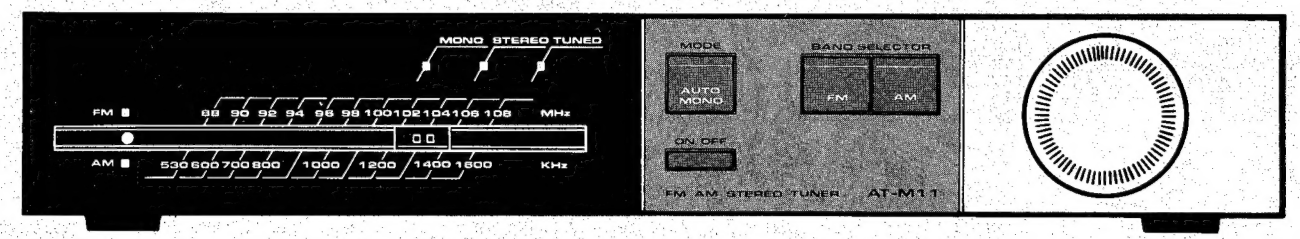
AKAI SERVICE MANUAL



FM AM STEREO TUNER

MODEL **AT-M11/L**

ABBREVIATIONS FOR SERVICE MANUAL
MODEL AT-M11/L

ABBREVIATION	EXPLANATION
AC	Alternating Current
AF	Audio Frequency
AGC	Auto Gain Control
AM	Amplitude Modulation
DET	DETector
FM	Frequency Modulation
IF	Intermediate Frequency
L. OSC	Local OSCillator
LW	Long Wave
MW	Medium Wave
RF	Radio Frequency
SENS	SENSitivity
T.H.D.	Total Harmonic Distortion
VCO	Voltage Controlled Oscillator

FM AM STEREO TUNER

MODEL AT-M11/L

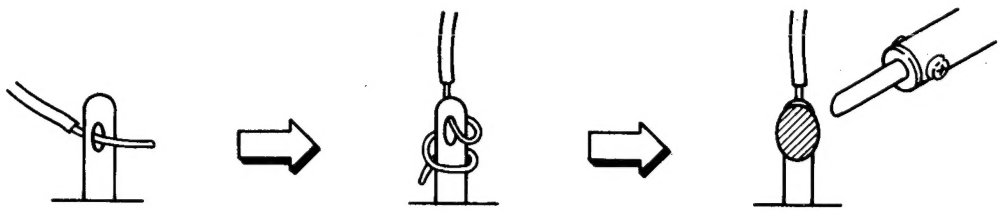
THIS MANUAL IS APPLICABLE TO BOTH SILVER AND BLACK PANEL MODEL

SAFETY CHECK AFTER SERVICING

Confirm the specified insulation resistance between power cord plug prongs and externally exposed parts of the set is greater than 10 Mohms, but for equipment with external antenna terminals (tuner, receiver, etc.) and is intended for [C] or [A], specified insulation resistance should be more than 2.2 Mohms (ground terminals, microphone jacks, headphone jacks. line-in-out jacks etc.)

PRECAUTIONS DURING SERVICING

1. Parts identified by the ⚠ symbol parts are critical for safety.
   Replace only with parts number specified.
2. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation. These must also be replaced only with specified replacements.
   Examples: RF converters, tuner units, antenna selector switches, RF cables, noise blocking capacitors, noise blocking filters, etc.
3. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads
4. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers (Insulating Barriers)
   4) Insulation sheets for transistors
   5) Plastic screws for fixing microswitch (especially in turntable)
5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap ends of wires securely about the terminals before soldering.

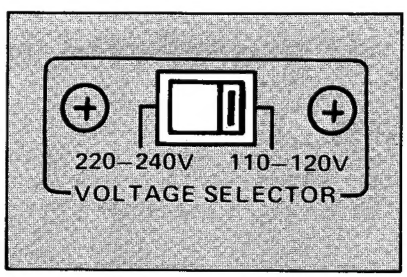


6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).
7. Check that replaced wires do not contact sharp edged or pointed parts.
8. Also check areas surrounding repaired locations.
9. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

VOLTAGE CONVERSION

Models for Canada, USA, Europe, UK and Australia are not equipped with this facility. Each machine is preset at the factory according to destination, but some machines can be set to 110V, 120V, 220V or 240V as required. If your machine's voltage can be converted:

1. Disconnect the power cord.
2. Set the VOLTAGE SELECTOR located on the rear panel with a screwdriver until the correct voltage is indicated.



SECTION 1

SERVICE MANUAL

TABLE OF CONTENTS

For basic adjustments, measuring methods, and operating principles, refer to GENERAL TECHNICAL MANUAL.

I . SPECIFICATIONS

FM TUNER SECTION	
TUNING FREQUENCY RANGE	87.5MHz to 108.0MHz
USABLE SENSITIVITY (300 ohms)	12.7dBf
QUIETING SENSITIVITY (S/N=50dB)	19.2dBf (Mono)/40.2dBf (Stereo)
CAPTURE RATIO	2.0dB
SELECTIVITY (±400kHz)	60dB
IMAGE REJECTION	50dB
IF REJECTION	80dB
SUPRIOUS REJECTION	80dB
AM SUPPRESSION	50dB
SUB CARRIER SUPPRESSION	55dB
S/N (IHF)	70dB (Mono)/65dB (Stereo)
T.H.D.	0.3% (Mono)/0.5% (Stereo)

AM TUNER SECTION	AM, MW	LW (AT-M11L ONLY)
TUNING FREQUENCY RANGE	525kHz to 1,605kHz	160kHz to 340kHz
USABLE SENSITIVITY	300μV/m (Loop ANT)	800μV/m (Loop ANT)
SELECTIVITY	25dB	30dB
IMAGE REJECTION	40dB	45dB
IF REJECTION	35dB	35dB
S/N	40dB	35dB
T.H.D.	1,5%	2.5%

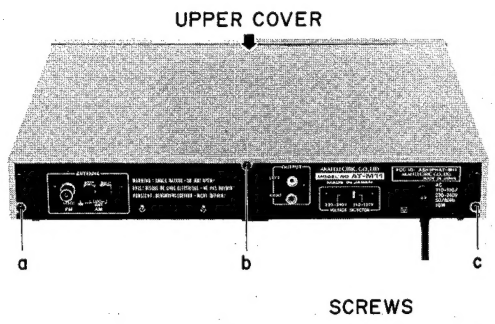
OUTPUT SECTION	
OUTPUT LEVEL	
FM (Europe and UK)	600mV
FM (Others)	720mV
MW (for AT-MIL)	220mV (30% Mod.)
POWER REQUIREMENTS	120V, 60Hz for USA and Canada 220V, 50Hz for Europe except UK 240V, 50Hz for UK and Australia 110V to 120V/220V to 240V, 50/60Hz Switchable for other countries
DIMENSIONS	350 (W) x 59 (H) x 255 (D) mm (13.8 x 2.3 x 10.0 inches)
WEIGHT	2.1Kg (4.6 lbs)

* For improvement purposes, specifications and design are subject to charge without notice.

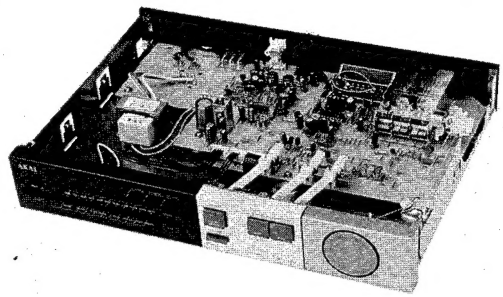
II. DISMANTLING OF UNIT

In case of trouble, etc. necessitating dismantling, please dismantle in the order shown in the photographs. Reassemble in reverse order.

1



2



III. CONTROLS

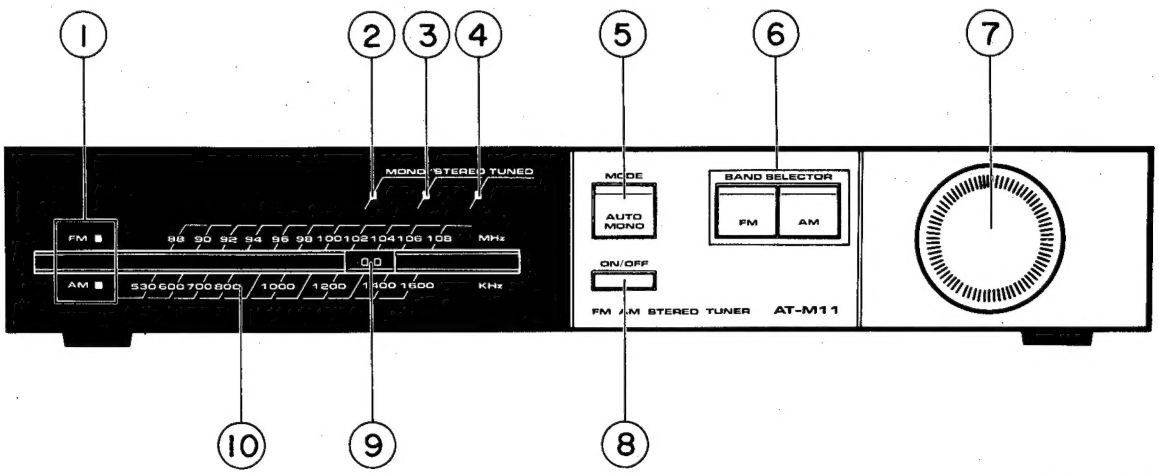


Fig. 3-1

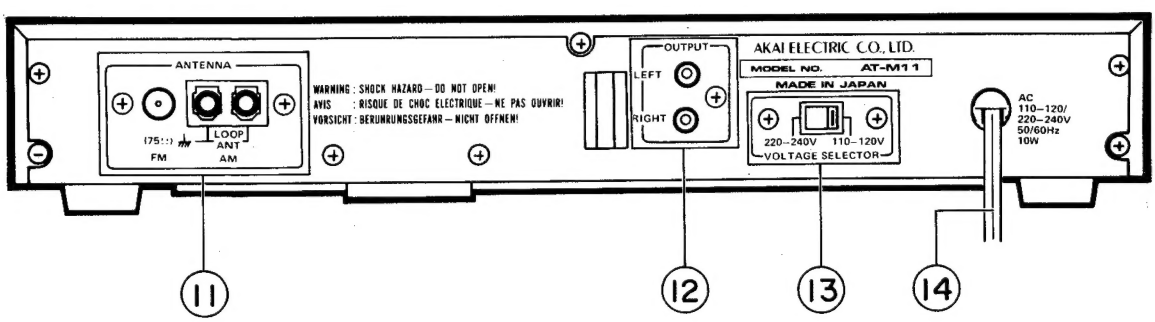


Fig. 3-2

1. BAND INDICATOR
2. FM MONO INDICATOR
3. FM STEREO INDICATOR
4. TUNED INDICATOR
5. FM MODE SELECTOR BUTTON
6. BAND SELECTOR BUTTON
7. TUNING DIAL
8. POWER ON/OFF BUTTON
9. DIAL POINTER
10. TUNING SCALE
11. ANTENNA TERMINAL
12. OUTPUT JACKS
13. VOLTAGE SELECTOR SWITCH
14. AC POWER CORD

IV. PRINCIPAL PARTS LOCATION

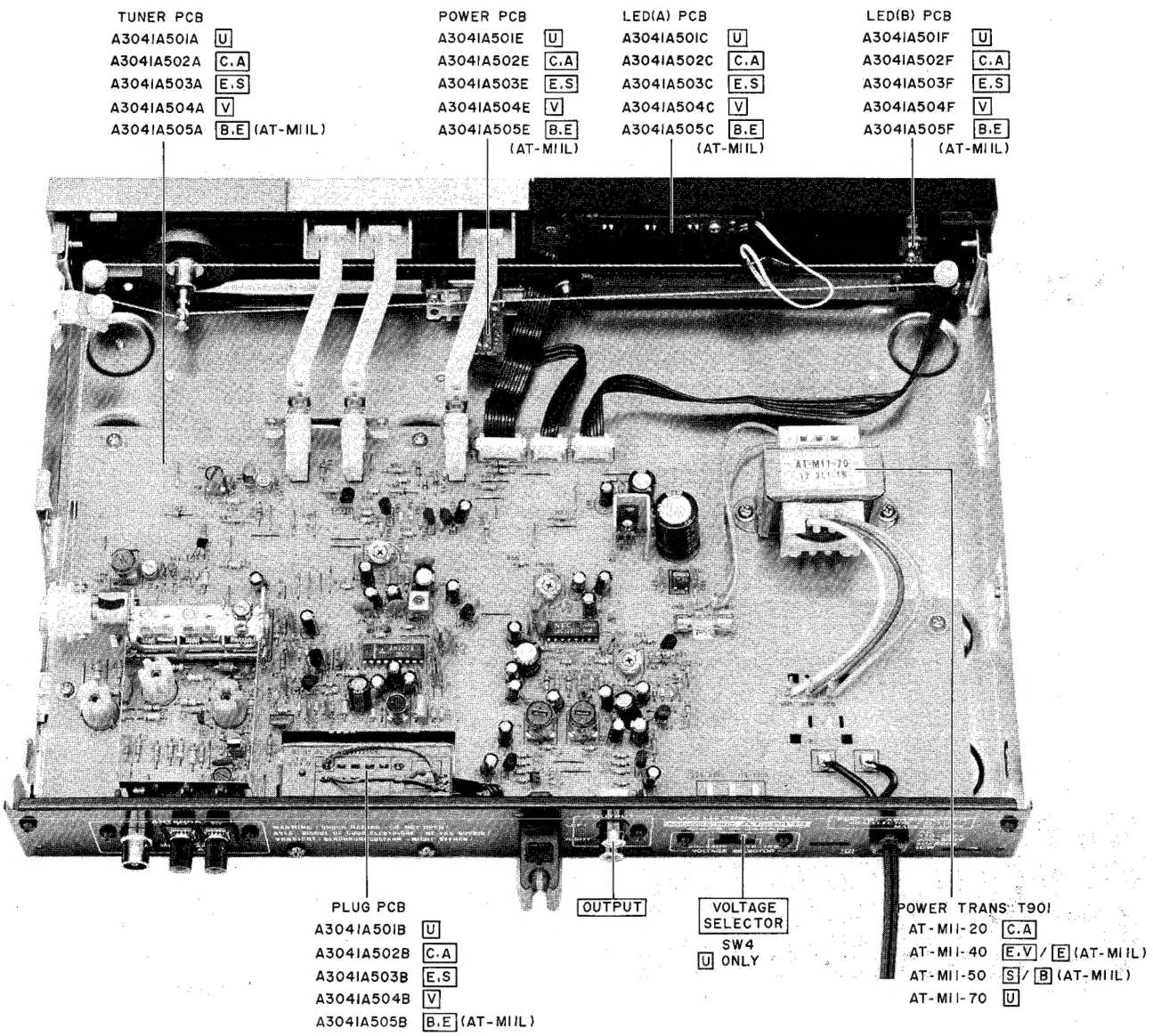


Fig. 4-1

V. EXPLANATION OF THE OPERATING FUNCTION

5-1. POWER ON OFF MUTE

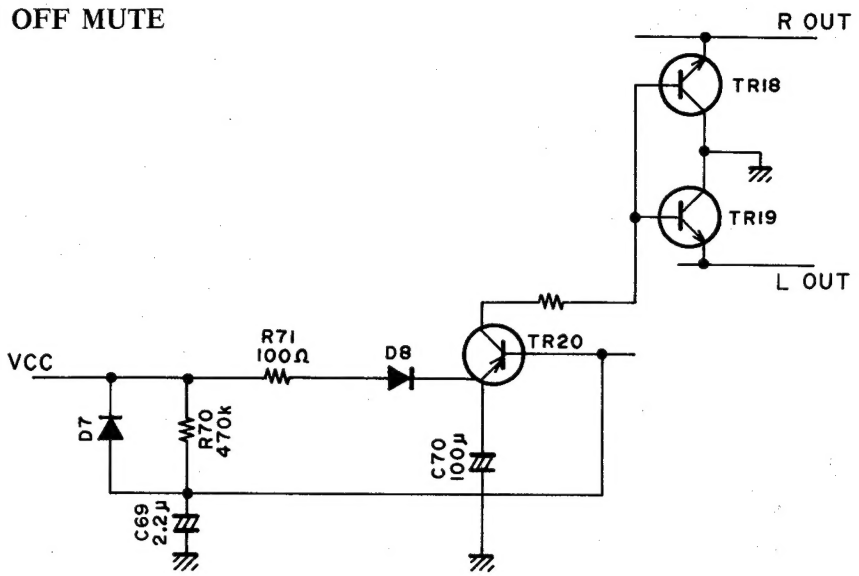


Fig. 5-1

1) When the power is on.

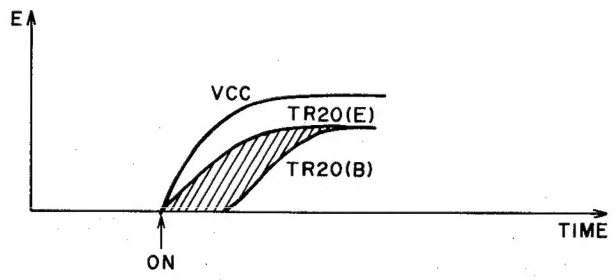


Fig. 5-2

When the base for TR20 is R70 (470k)XC69 (2.2μ), the emitter is R71 (100Ω)XC70(100μ) and is connected to the power Vcc through a constant value, so the rise of the electrical potential of the base curve is slower than that of the emitter.

As indicated in Fig. 5-2, the TR20 is on only during the slow part of the electrical potential of the TR20 base (the part marked with oblique lines) and the output line is short circuited by the positive bias of TR18 and TR19.

2) When the power is off.

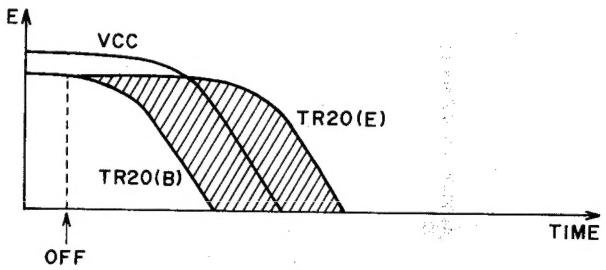


Fig. 5-3

After the power is turned off, the electrical potential of the TR20 base falls rapidly because C69 is discharged through D7. On the other hand, the voltage of the TR20 emitter falls slowly, taking a longer time than that of the base voltage, because the discharge of C70 is prevented by D8. So, at the point where the TR20 is biased in the forward direction (the part marked with oblique lines), the Mute TR18 and TR19 are also biased in the forward direction and the output line is short circuited.

5-2. FM AUTO OPERATION AND MUTING

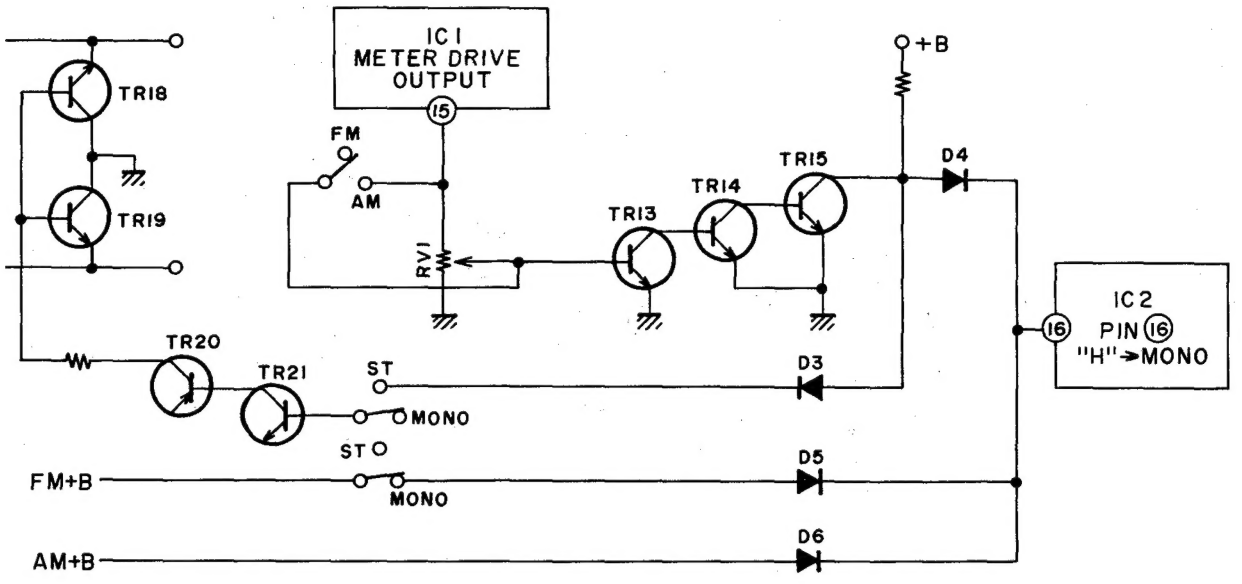
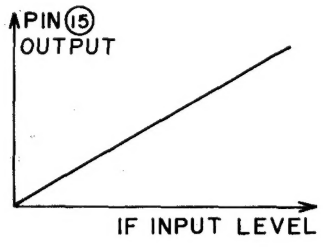


Fig. 5-4



1) FM Auto

When on ST Mode, ST-Mono automatic selection is performed by the use of the ICI AN7273 Pin No. (15) meter drive output terminal. Pin No. (15) outputs the voltage in proportion to the IF input level, as in the Fig. 5-5.

In the case of the IF input level being low and the output voltage being extremely low;

TR13 Off → TR14 On → TR15 Off,

and the number (16) pin in IC1 becomes H level. Conversely, when the voltage of the number 15 pin is very high, the TR15 collector becomes L level.

2) Fixed Monaural

When on fixed monaural, impress FM + B to the number (16) pin in IC2 through D5. Also when on AM, AM+B is impressed to the number (16) pin through D6.

3) Muting

When on FM Auto, the TR15 collector is impressed to the TR21 base through D3 and the output is muted by the TR20, TR18 and TR19.

5-3. MW, LW, SELECTION CIRCUIT

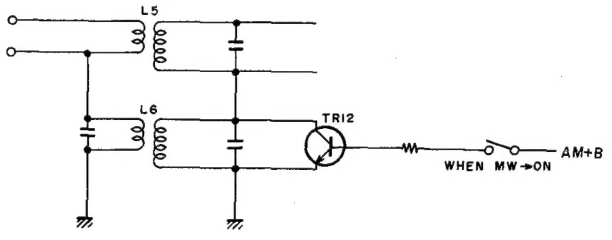


Fig. 5-6

When on MW, the TR12 is biased to positive and L5 is earthed directly.

5-4. FM, AM, OUTPUT SELECTION CIRCUIT

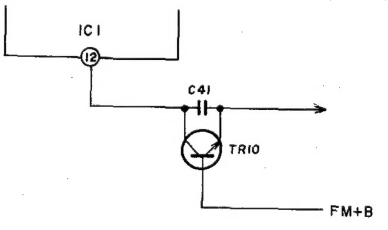


Fig. 5-7

In ICI AN7273, the audio output pin is used for both AM and FM, so it is difficult to adjust the frequency characteristics of AM and FM separately. Particularly the low characteristics of AM are flat.

In order to adjust these characteristics C41 insert and cancel are switched at TR10.

VI. TUNING CORD THEADING

TIE THE TUNING CORD
FOR TWO TIMES AND
PUT CEMENT OR GLUE

Fig. 6-1

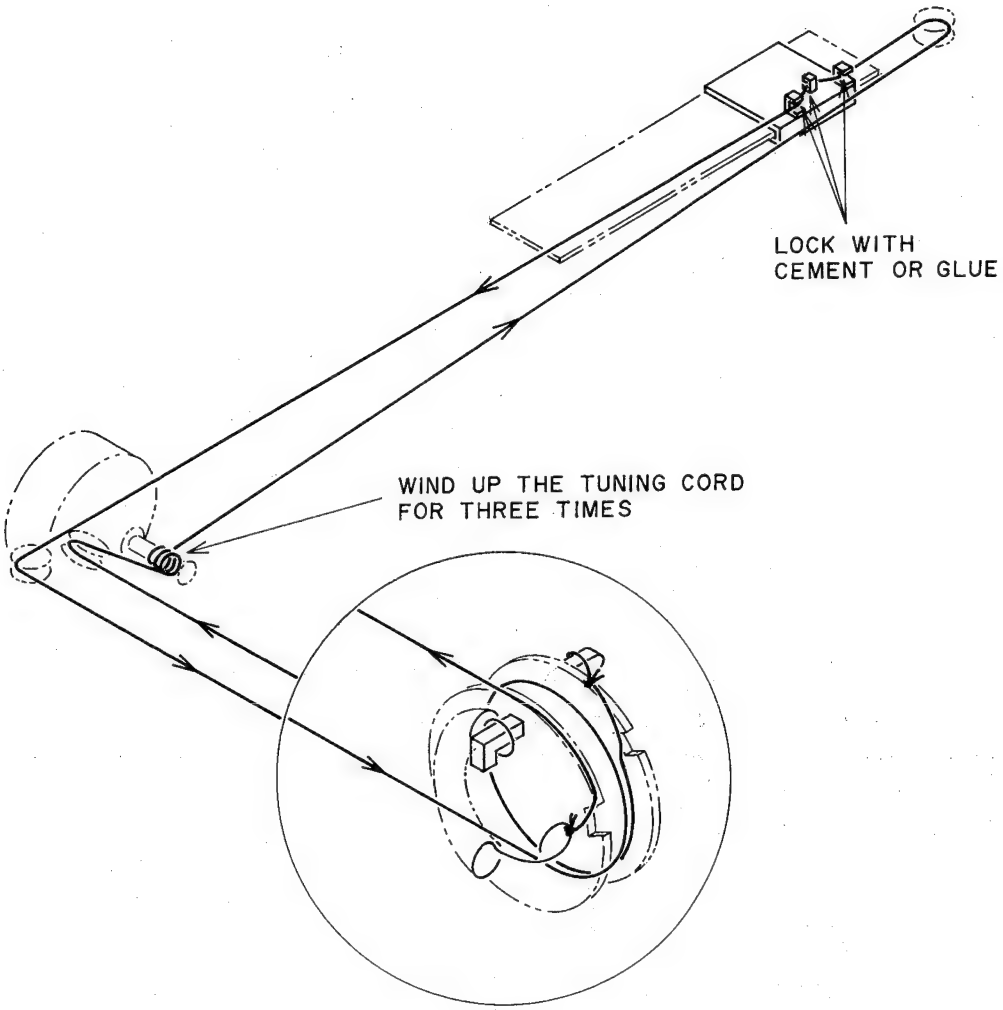


Fig. 6-2

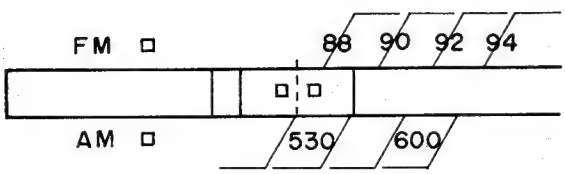


Fig. 6-3

Tune the TUNING DIAL to low end, then set the Dial pointer as shown Fig. 6-3.

VII. TUNER ADJUSTMENT

7-1. THE INSTRUMENT CONNECTIONS

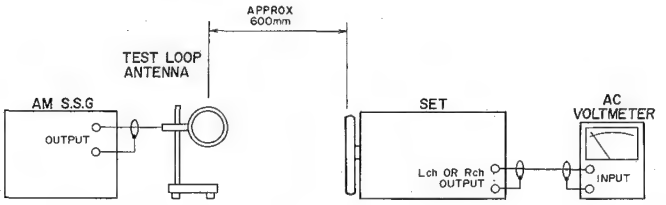


Fig. 7-1 Instrument Connections for AM (MW, LW) Section Adjustment

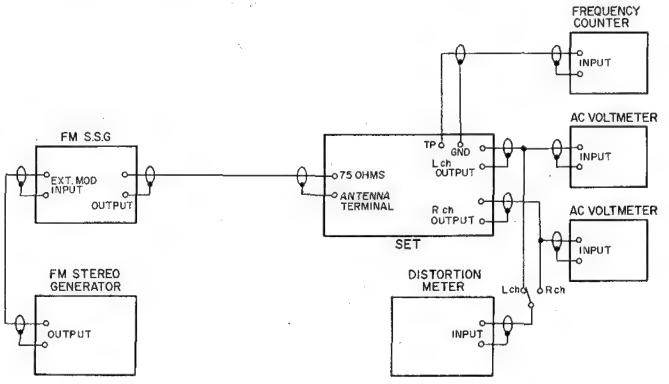
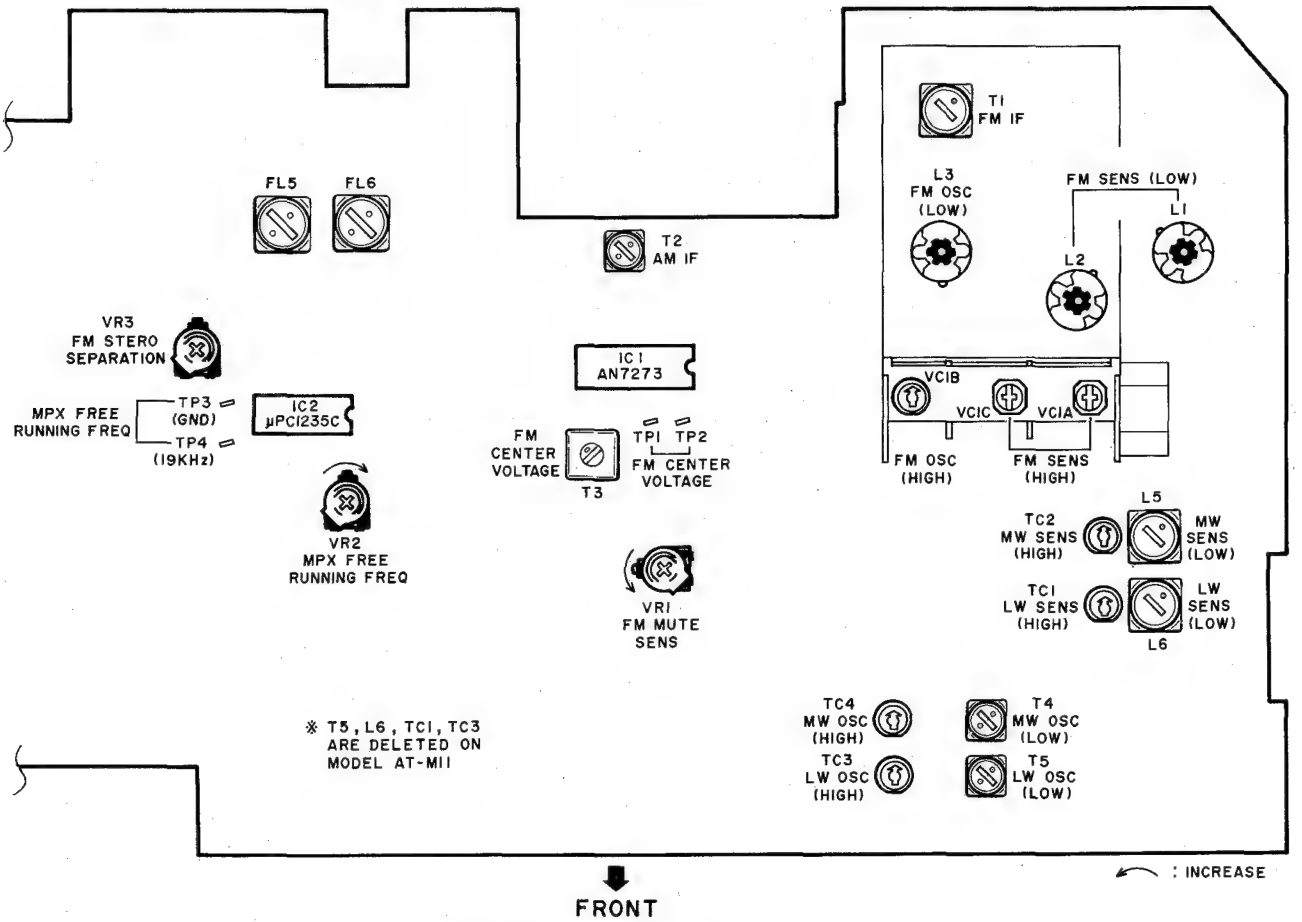
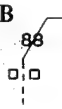
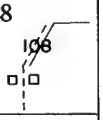
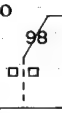
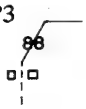


Fig. 7-2 Instrument Connections for FM Section Adjustment

7-2. AT-K1/L TUNER P.C BOARD ADJUSTMENT POINT



7-3. FM ADJUSTMENT (Refer to Figs. 7-2 and 7-3)

Step	Adjustment Item	Adjustment Point	Result	Remarks
1	FM OSC (Low)	L3	Maximum output	BAND SELECTOR to FM 88MHz, 60dB input Dial Pointer to 88MHz 
2	FM OSC (High)	VCIB	Maximum output	108MHz, 60dB input Dial Pointer to 108 MHz 
3	For best Result, Repeat Steps 1 and 2 two or three times.			
4	FM IF	T1	Maximum output Minimum Distortion	98MHz, 60dB Mono input Dial Pointer to 98MHz 
5	Low Range Sensitivity	L1, L2	Less than 6dB input from SSG	MODE switch to AUTO MONO 88MHz Mono input Tune the signal (88MHz)  3% Distortion Factor
6	High Range Sensitivity	VCIA, VCIC	Less than 6dB input from SSG	108MHz Mono input Tune the signal (108μHz)  3% Distortion Factor
7	For best Result, Repeat Steps 5 and 6 two or three times.			
8	FM Center Voltage	T3	0V indication	Voltmeter between TP1 and TP2. Tune only noise without interference from broadcasting.
9	Distortion (MONO) (Confirmation)	None	Less than 1.0%	98MHz, 60dB, Mono input. Tune to signal (98MHz) 
10	FM Muting level	VRI	NO SIGNAL	Voltmeter between TP1 and TP4. MODE switch to "OFF" 98MHz, stereo input. o Set the input level from SSG to 25dB (±12dB) o Turn VR1 fully clockwise. o Turning VR1 counter-clockwise and stop when the output signal is zero.
11	MPX Free Running Freq.	VR2	19kHz ± 0.05kHz	88MHz, 60dB Mono input. Connect a frequency counter between TP3 (GND) and TP4. 
12	FM Stereo Separation	VR3	More than 35dB	98MHz, 60dB stereo Lch (Rch) input. Tune to signal (98MHz). Minimum output of Rch (Lch).
13	FM Stereo Distortion Factor		Less than 1.5%	98MHz, 74dB stereo input. Tune to signal (98MHz). 

Step	Adjustment Item	Adjustment Point	Result	Remarks
14	Stereo LED indicate Sensitivity (Confirmation)		STEREO INDICATOR is turned off	MODE switch to "OFF" 98MHz stereo input. Confirm that the STEREO INDICATOR turns off at the inputlevel of 25dB (±12 dB) when decreasing the level from 40dB.
15	Output Voltage (Confirmation)		0dBm ±3dB U.C.A model 3dBm ±3dB V.E. MIIL model	98MHz, 60dB input Tune to signal (98MHz)

NOTES

1. Set the internal modulation signal generator to 100% (75kHz div.), 1kHz of each.
2. Adjust L3, if the distortion factor is more than 1.5% in step 13. (Confirm the sensitivity in case L3 is turned more than a half turn.)

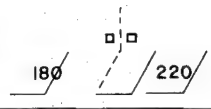
7-4. AM (MW) ADJUSTMENT (Refer to Figs. 7-1 and 7-3)

Step	Adjustment Item	Adjustment Point	Result	Remarks
1	AM (MW) OSC (LOW)	T4	Maximum output Minimum Distortion	BAND SELECTOR to AM (MW) 530 kHz, 60dB input Dial pointer to 530kHz 
2	AM (MW) OSC (HIGH)	TC4	Maximum output Minimum Distortion	1600kHz, 60dB input Dial pointer to 1600kHz 
3	For best Result, Repeat Step 1 and 2, two or three times			
4	AM (MW) Low Range Sensitivity	L5	Less than 60dB input from SSG	600kHz input Tune the signal (600kHz)  Less than 10% Distortion Factor
5	AM (MW) High Range Sensitivity	TC2	Less than 60dB input from SSG	1400kHz input Tune the signal (1400kHz)  Less than 10% Distortion Factor
6	For best Result, Repeat Step 4 and 5 two or three times			
7	AM IF	T2	Maximum output Minimum Distortion	600kHz, 60dB input Tune the signal (600kHz) 
8	Distortion Factor (Confirmation)		Less than 2.5%	1000kHz, 74dB input Tune the signal (1000kHz) 
9	Output Voltage (Confirmation)		−10dBm ±3dB	1000kHz, 74dB input Tune the signal (1000kHz) 
10	TUNING LED (Confirmation)		LED is lit	1000kHz, 74dB input Tune the signal (1000kHz) 

NOTE

Set the internal modulation signal generator to 30%, 1kHz of each.

7-5. LW ADJUSTMENT (AT-M11L ONLY) (Refer to Figs. 7-1 and 7-3)

Step	Adjustment Item	Adjustment Point	Result	Remarks
1	LW OSC (LOW)	T5	Maximum output Minimum Distortion	BAND SELECTOR to LW 160kHz, 60 dB input Dial pointer to 160kHz 
2	LW OSC (HIGH)	TC3	Maximum output Minimum Distortion	340kHz, 60dB input Dial pointer to 340kHz 
3	For best Result, Repeat Step 1 and 2 two or three times.			
4	LW Low Range Sensitivity	L6	Less than 65dB input from SSG	160kHz input Tune the signal (160kHz)  Less than 10% Distortion Factor
5	LW High Range Sensitivity	TC1	Less than 65dB input from SSG	300kHz input Tune the signal (300kHz)  Less than 10% Distortion Factor
6	For best Result, Repeat Step 4 and 5 two or three times.			
7	Distortion Factor (Confirmation)		Less than 3%	200kHz, 74dB input Tune the signal (200kHz) 
8	Output Voltage (Confirmation)		−10dBm ±3dB	200kHz, 74dB input Tune the signal (200kHz)
9	TUNING LED (Confirmation)		LED is lit	200kHz, 74dB input Tune the signal (200kHz)

NOTE

Set the internal modulation signal generator to 30%, 1kHz of each.

VIII. CLASSIFICATION OF VARIOUS P.C EOARDS

8-1. P.C BOARD TITLES AND IDENTIFICATION NUMBERS

MODEL AT-M11

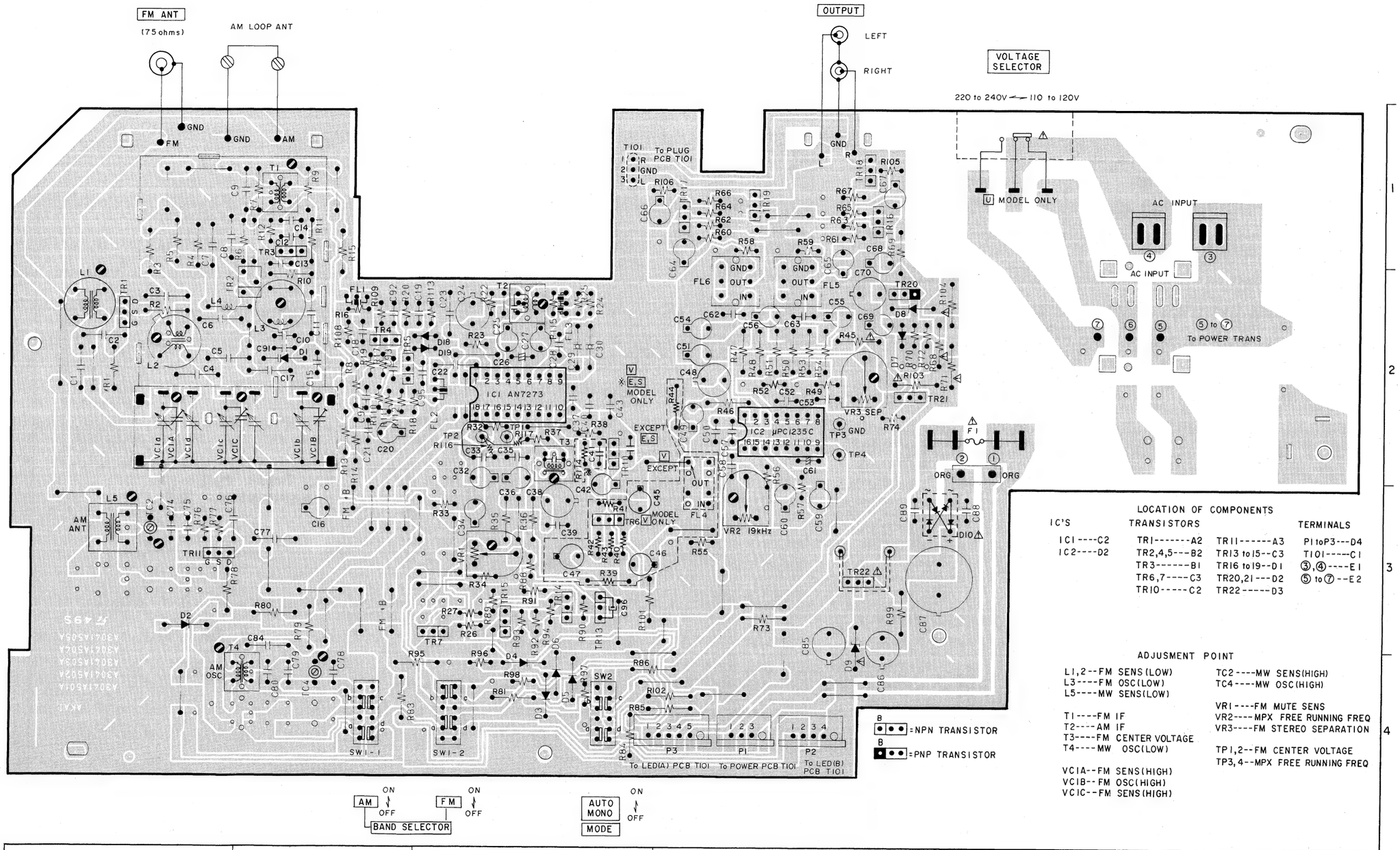
P.C BOARD TITLE		P.C BOARD NUMBER	REMARKS
TUNER	P.C BOARD	A3041A501A	U
TUNER	P.C BOARD	A3041A502A	C,A
TUNER	P.C BOARD	A3041A503A	E,S
TUNER	P.C BOARD	A3041A504A	V
LED (A)	P.C BOARD	A3041A501C	U
LED (A)	P.C BOARD	A3041A502C	C,A
LED (A)	P.C BOARD	A3041A503C	E,S
LED (A)	P.C BOARD	A3041A504C	V
PLUG	P.C BOARD	A3041A501B	U
PLUG	P.C BOARD	A3041A502B	C,A
PLUG	P.C BOARD	A3041A503B	E,S
PLUG	P.C BOARD	A3041A504B	V
LED (B)	P.C BOARD	A3041A501F	U
LED (B)	P.C BOARD	A3041A502F	C,A
LED (B)	P.C BOARD	A3041A503F	E,S
LED (B)	P.C BOARD	A3041A504F	V
DIAL POINTER	P.C BOARD	A3041A501D	U
DIAL POINTER	P.C BOARD	A3041A502D	C,A
DIAL POINTER	P.C BOARD	A3041A503D	E,S
DIAL POINTER	P.C BOARD	A3041A504D	V
POWER	P.C BOARD	A3041A501E	U
POWER	P.C BOARD	A3041A502E	C,A
POWER	P.C BOARD	A3041A503E	E,S
POWER	P.C BOARD	A3041A504E	V

MODEL AT-M11L

P.C BOARD TITLE		P.C BOARD NUMBER	REMAKRS
TUNER	P.C BOARD	A3041A505A	B,E
LED (A)	P.C BOARD	A3041A505C	B,E
PLUG	P.C BOARD	A3041A505B	B,E
LED (B)	P.C BOARD	A3041A505F	B,E
DIAL POINTER	P.C BOARD	A3041A505D	B,E
POWER	P.C BOARD	A3041A505E	B,E

8-2. COMPOSITION OF VARIOUS P.C BOARDS

1) TUNER P.C BOARD A3041A501A[U], A3041A502A[C,A], A3041A503A[E,S], A3041A504A[V]



LOCATION OF COMPONENTS

IC'S	TRANSISTORS		TERMINALS
IC1----C2	TR1-------A2	TR11------A3	P1 to P3---D4
IC2----D2	TR2,4,5---B2	TR13 to 15--C3	TI01-----C1
	TR3------B1	TR16 to 19--D1	③,④----E1
	TR6,7----C3	TR20,21---D2	⑤ to ⑦--E2
	TR10-----C2	TR22-----D3	

ADJUSMENT POINT

L1,2--FM SENS(LOW)	TC2----MW SENS(HIGH)
L3----FM OSC(LOW)	TC4----MW OSC(HIGH)
L5----MW SENS(LOW)	
	VR1----FM MUTE SENS
T1----FM IF	VR2----MPX FREE RUNNING FREQ
T2----AM IF	VR3----FM STEREO SEPARATION
T3----FM CENTER VOLTAGE	
T4----MW OSC(LOW)	TP1,2--FM CENTER VOLTAGE
	TP3,4--MPX FREE RUNNING FREQ
VC1A--FM SENS(HIGH)	
VC1B--FM OSC(HIGH)	
VC1C--FM SENS(HIGH)	

A	B	C	D
E C B 2SA608KNP 2SC536NP 2SC930 2SC3383	E C B 2SD612K	E C B 2SC2999 2SD1012-V	D S G 2SK161 2SK192

C	D
TR1----------2SK161(Y)	TR13 to 15---2SC536NP(E,F,G)
TR2----------2SC2999(C,D)	TR16,17-----2SC3383(S,T)
TR3 to 5-----2SC930(E,F)	TR18,19-----2SD1012-V(F,G)
TR6----------2SC3383(S,T)	TR20--------2SA608K-NP(D,E,F)
TR7,10-------2SC536NP(E,F,G)	TR21--------2SC536NP(E,F,G)
TR11---------2SK192(Y)	TR22--------2SD612K(D,E,F)

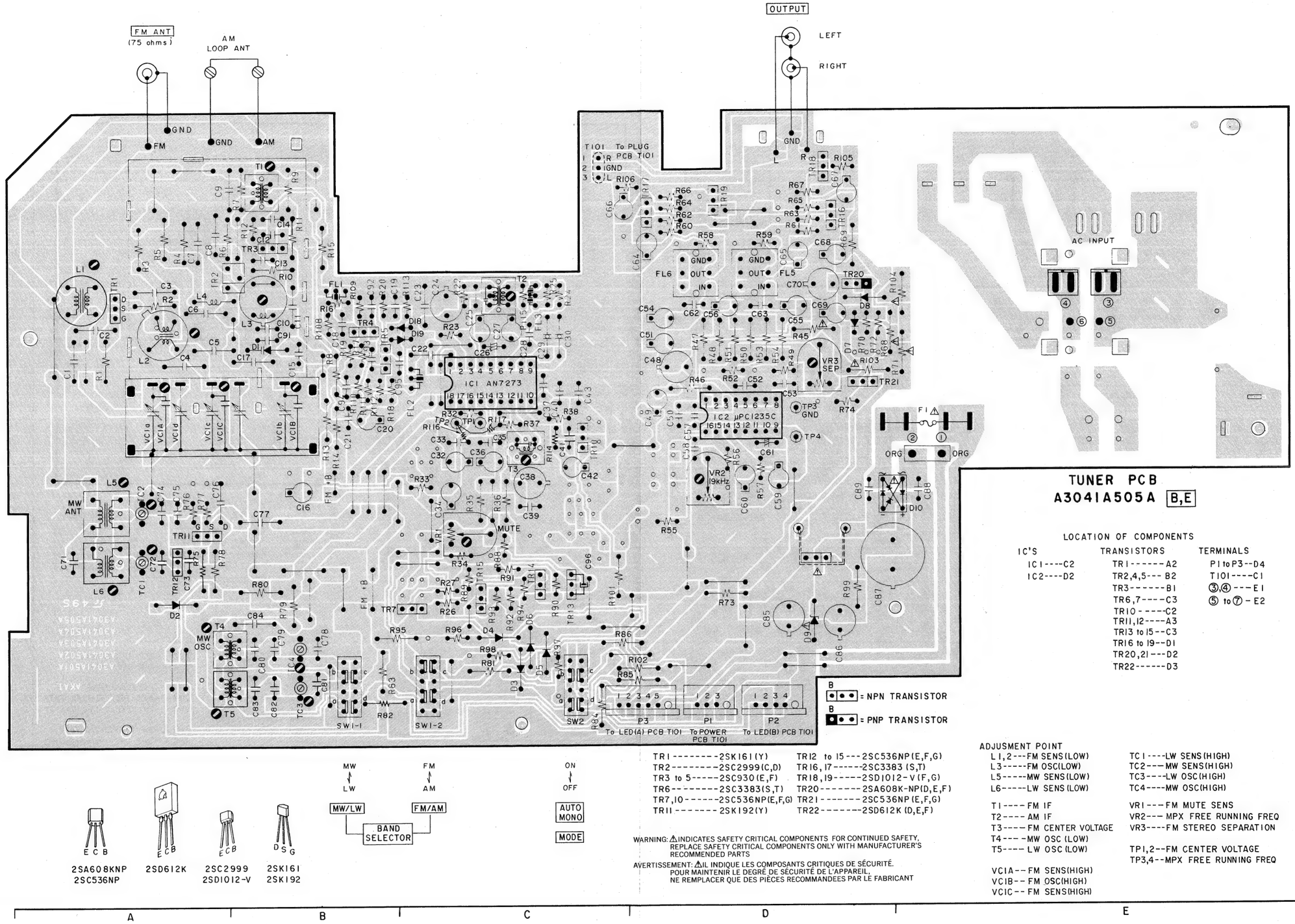
TUNER PCB

A3041A501A	U
A3041A502A	C,A
A3041A503A	E,S
A3041A504A	V

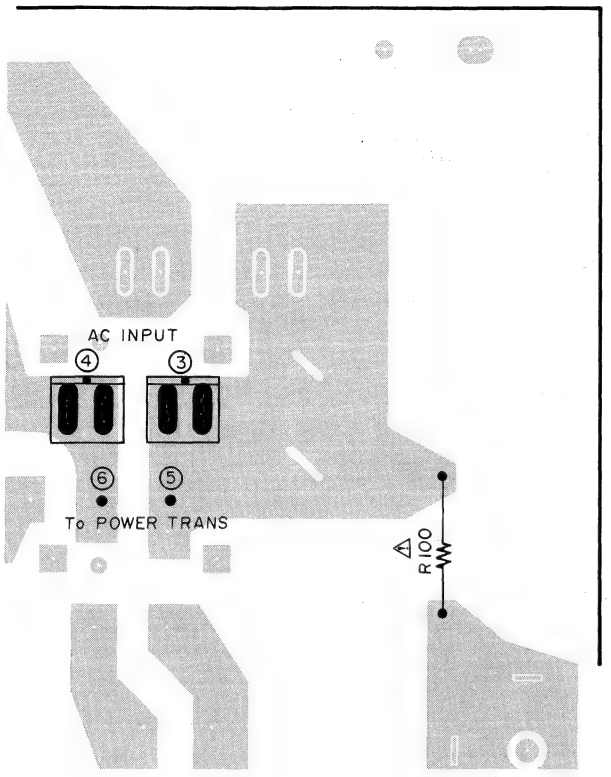
WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: ⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT

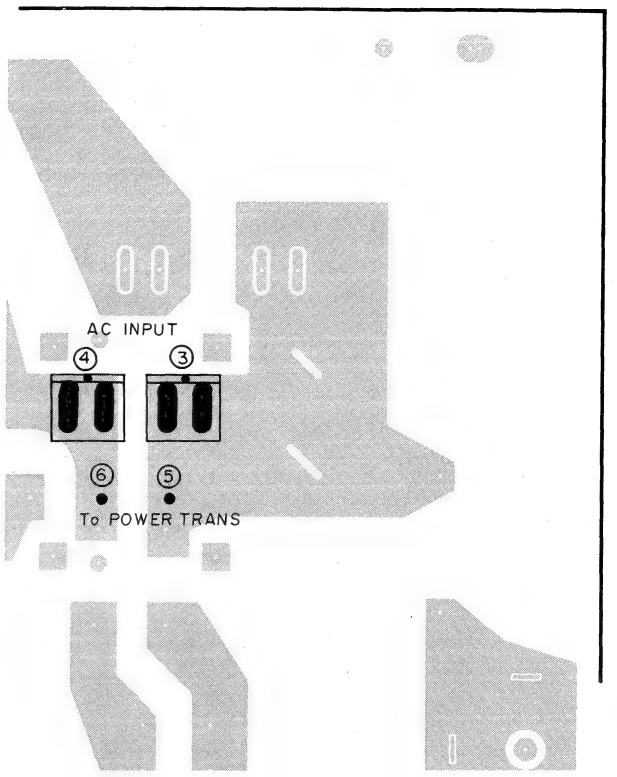
2) TUNER P.C BOARD A3041A505A B,E



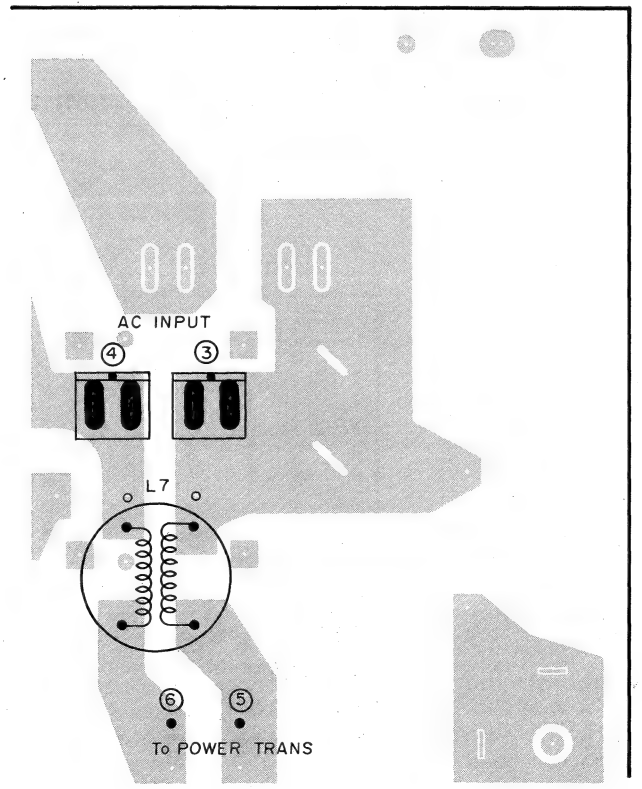
3) A3041A502 C,A



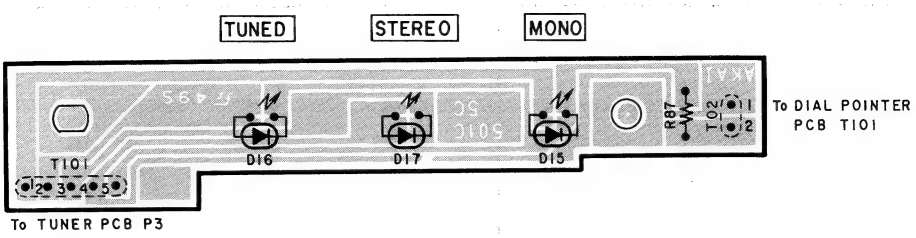
4) A3041A503 E,S



5) A3041A504 V

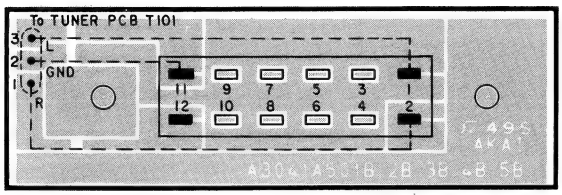


6) OTHER P.C BOARD



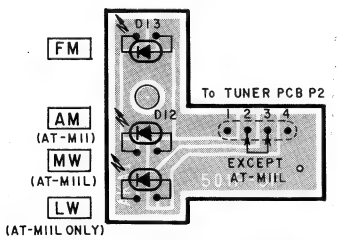
LED(A) PCB

A3041A501C [U]
A3041A502C [C,A]
A3041A503C [E,S]
A3041A504C [V]
A3041A505C [B,E] (AT-M11L)



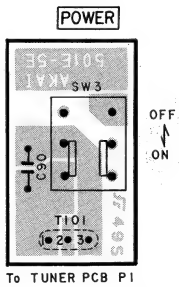
PLUG PCB

A3041A501B [U]
A3041A502B [C,A]
A3041A503B [E,S]
A3041A504B [V]
A3041A505B [B,E] (AT-M11L)



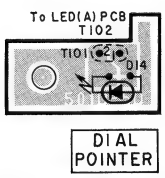
LED(B) PCB

A3041A501F [U]
A3041A502F [C,A]
A3041A503F [E,S]
A3041A504F [V]
A3041A505F [B,E]
(AT-M11L)



POWER PCB

A3041A501E [U]
A3041A502E [C,A]
A3041A503E [E,S]
A3041A504E [V]
A3041A505E [B,E]
(AT-M11L)



DIAL POINTER PCB

A3041A501D [U]
A3041A502D [C,A]
A3041A503D [E,S]
A3041A504D [V]
A3041A505D [B,E]
(AT-M11L)

SECTION 2

PARTS LIST

TABLE OF CONTENTS

Resistor and Capacitor which is not listed in this parts list, please refer to COMMON LIST FOR SERVICE PARTS.

ATTENTION

1. When placing an order for parts, be sure to list the parts no. model no., and description. There are instances in which if any of this information is omitted, parts cannot be shipped or the wrong parts will be delivered.
2. Please be careful not to make a mistake in the parts no. If the parts no. is in error, a part different from the one ordered may be delivered.
3. Because parts number and parts unit supply in the Preliminary Parts List may be partially changed, please use this parts list for all future reference.

HOW TO USE THIS PARTS LIST

1. This Parts List shows the parts that are considered necessary for repairs. Other parts, such as resistors and capacitors, are shown in the "Common List for Service Parts". Select and order such parts from the "Common List for Service Parts".
2. The Recommended Spare Parts shows those parts in the Parts List which are considered particularly important for service.
3. Parts not shown in the Parts List and "Common List for Service Parts" will not be supplied in principle.
4. How to read list

a) Mechanism Block

2. HEAD BASE BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
2-1x	BH-T2023A320A	HEAD BASE BLOCK GX-F66R
2-2	HP-H2206A010A	HEAD R/P PR4-8FU C
2-3	ZS-477876	PAN20x03STL CMT
2-4	ZS-536488	BID20x08STL CMT
2-5	ZG-402895	CS ANGLE ADJUST SPRING

SP (Service Parts) Classification

A small "x" indicates the inability to show that particular part in the Photo or Illustration.

This number corresponds with the individual parts index number in that figure

This number corresponds with the Figure Number

b) P.C Board Block

6. SYS. CON. P.C BOARD BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
6-1	BA-T2034A070A	PC SYS CON BLK GX-F44R
6-IC1	EI-324536	IC HD14049BP
6-IC2	EI-336801	IC MB8841-564M
6-IC3	EI-331661	IC SN7405N
6-IC4	EI-336725	IC M54527P
6-TR1to4	ET-200985	TR 2SC2603 F,G
6-TR5to28	ET-554657	TR 2SA733A P,Q
6-D1	ED-318292	D SILICON H 1S2473T-77 T26
6-D2to4	ED-308952	D GERMA V 1K34A-LR F07
6-D5to10	ED-318292	D SILICON H 1S2473T-77 T26
6-X1	EI-318384	OSC X'TAL NC-18C 3.579545MHZ

SP (Service Parts) Classification

This reference numbers corresponds with symbol numbers of Schematic Diagrams.

5. Both the kind of part and installation position can be determined by the Parts Number. To determine where a parts number is listed, utilize Parts Index at end of Parts List. It is necessary first of all to find the Parts Number. This can be accomplished by using the Reference Number listed at right of parts number in the Parts Index.

WARNING

⚠ INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURE'S RECOMMENDED PARTS

AVERTISSEMENT

⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÉCES RECOMMANDEES PAR LE FABRICANT

RECOMMENDED SPARE PARTS

Because, if the parts listed below are on hand, almost any repair can be accomplished, we suggest that you stock these Recommended Spare Parts Items.

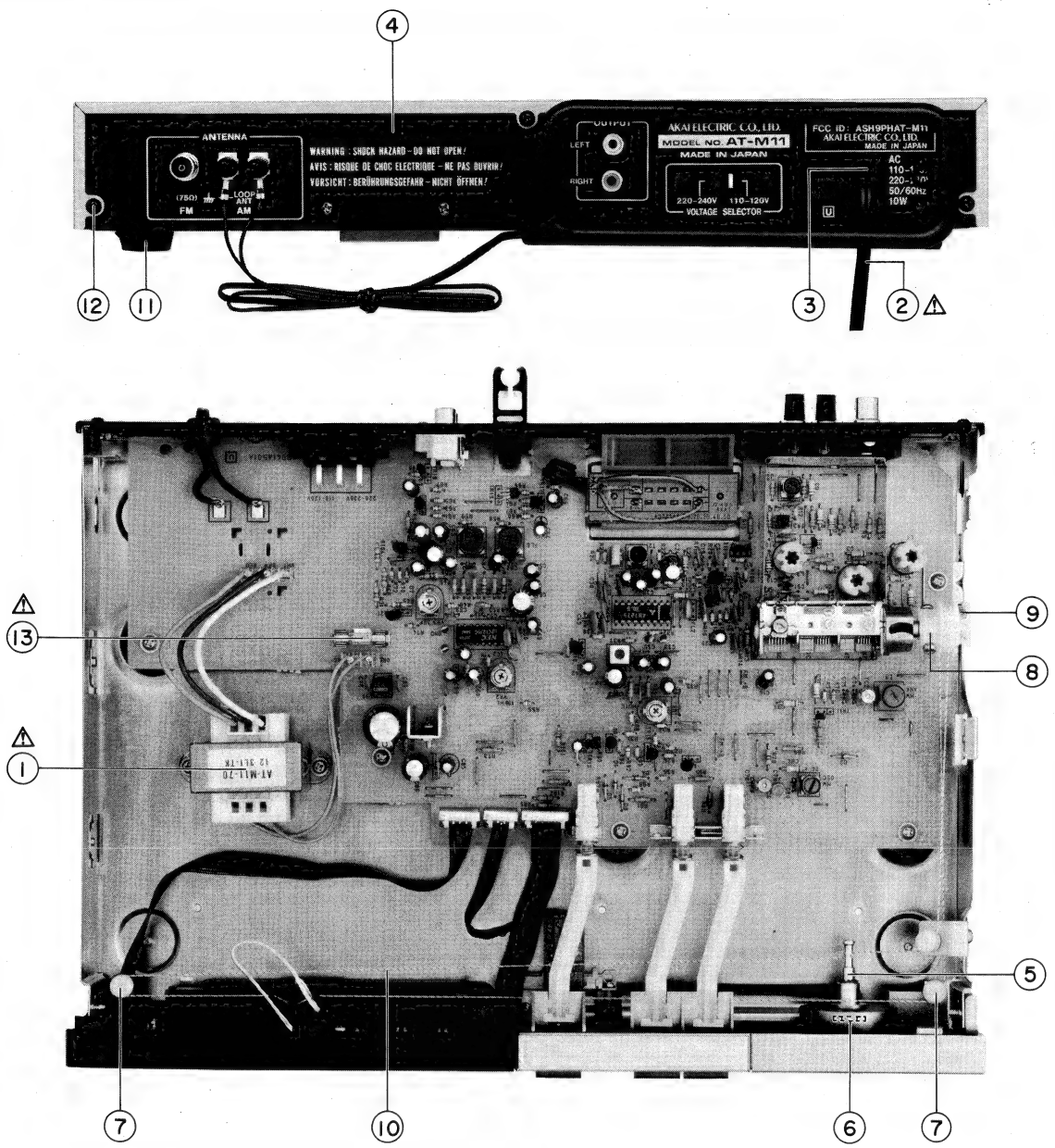
REF. NO.		PARTS NO.	DESCRIPTION
1		BT-351225	⚠ TRANS POWER AT-M11-20
2		BT-351226	⚠ TRANS POWER AT-M11-40
3		BT-351227	⚠ TRANS POWER AT-M11-50
4		BT-351224	⚠ TRANS POWER AT-M11-70
5		ED-345555	⚠ D SILICON DBB10C 200/1.0A
6		ED-351851	D LED SLP 458B UMBER
7		ED-349584	D LED SLP-175B RED
8		ED-349617	D LED SLP-475B-50 YLW
9		ED-301911	D SILICON H DS448
10		ED-344280	D SILICON H GMA-01-FY2 F05
11		ED-351850	D VARACTOR 1SV71
12		EF-695766	⚠ FUSE SEMKO T 250V 0.31A
13		EF-306088	⚠ FUSE TSC 125V 0.31A
14		EH-349002	FILTER CE HCFM2-450BL 0.450MHz
15		EH-315406	FILTER CE SFE10.7MLKA 10.7MHz
16		EH-345729	FILTER CE SFE10.7MZ1KA 10.7MHz
17		EH-349058	FILTER LC LP BL-30MP
18		EH-349059	FILTER LC LP 10PD
19		EI-351849	IC UPC1235C
20		EI-351848	IC.AN7273
21		EO-337640	COIL IFT 119AC-15533X 10.7MHz
22		EO-349001	COIL IFT 7MC-4718N 0.450MHz
23		EO-351847	COIL OSC 2 7BRS-8896A 570.0UH
24		EO-351846	COIL OSC 2 7BRS-8897A 120.0UH
25		EO-345547	COIL VARI 2 TEFI-OSC-U
26		EO-345545	COIL VARI 2 TEFI-RF-1
27		EO-349348	COIL VARI 2 TEFI-RF-1A
28		EO-345546	COIL VARI 2 TEFI-RF-2
29		EO-337598	COIL VARI 2 25A-1353-01
30		EO-337599	COIL VARI 2 25A-1354-03
31		ES-351841	SW PUSH ESB62935 2THROW
32		ES-351840	SW PUSH ESB62936 2THROW
33		ES-351842	SW PUSH ESB6282 2-04-02S
34		ES-351844	SW PUSH SUL101A 2-02-02S
35		ES-349464	SW SLIDE 00120319 01-2
36		ET-349458	TR FET 2SK192A-Y
37		ET-322244	TR 2SA608K-NP F,G
38		ET-336869	TR 2SC2999 C,D
39		ET-349081	TR 2SC3383 S,T
40	N	ET-621235	TR 2SC536NP E,F,G
41	N	ET-618873	TR 2SC930 E,F
42	N	ET-328437	TR 2SD1012-V F,G
43	N	ET-307193	TR 2SD612K D,E,F
44		ET-351853	TR FET 2SK161 Y
45		EV-337993	R S-FIX H RVF8P01 3P 203
46		EV-345784	R S-FIX H RVF8P01 3P 304
47		EV-337992	R S-FIX H RVF8P01 3P 502

NOTE N: New Parts

1. TUNER P.C BOARD BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
1-1U	BA-A3041A020A	PC TUNER BLK AT-M11(U) (U)
1-1C	BA-A3041A020B	PC TUNER BLK AT-M11 (C) (C,A)
1-1E	BA-A3041A020C	PC TUNER BLK AT-M11 (E) (E,S)
1-1V	BA-A3041A020D	PC TUNER BLK AT-M11 (V) (V)
1-1LE	BA-A3041A020E	PC TUNER BLK AT-M11L (E) (L-E)
1-1LB	BA-A3041A020F	PC TUNER BLK AT-M11L (B) (L-B)
	TUNER P.C BOARD	
1-IC1	EI-351848	IC.AN7273
1-IC2	EI-351849	IC UPC1235C
1-TR1	ET-351853	TR. FET 2SK161Y
1-TR2	ET-336869	TR 2SC2999 C,D
1-TR3 to TR5	ET-618873	TR 2SC930 E,F
1-TR6	ET-349081	TR 2SC3383 S,T (V)
1-TR7	ET-621235	TR 2SC536NP E,F,G
1-TR10	ET-621235	TR 2SC536NP E,F,G
1-TR11	ET-349458	TR FET 2SK192A-Y
1-TR12	ET-621235	TR 2SC536NP E,F,G (L)
1-TR13 to TR15	ET-621235	TR 2SC536NP E,F,G
1-TR16, 17	ET-349081	TR 2SC3383 S,T
1-TR18, 19	ET-328437	TR 2SD1012-V, F,G
1-TR20	ET-322244	TR 2SA608K-NP F,G
1-TR21	ET-621235	TR 2SC536NP E,F,G
1-TR22	ET-307193	⚠ TR 2SD612K D,E,F
1-D1	ED-351850	D VARACTOR 1SV71
1-D2 to D6	ED-301911	D SILICON H DS448
1-D7	ED-344280	D SILICON H GMA-01-FY2 F05
1-D8	ED-301911	D SILICON H DS448
1-D9	ED-330218	⚠ D ZENER H HZ15L 2
1-D10	ED-345555	⚠ D SILICON DBB10C 200/1.0A
1-D18,19	ED-344280	D SILICON H GMA-01-FY2 F05
1-SW1	ES-351840	SW PUSH ESB62936 2THROW (EXCEPTL)
1-SW1L	ES-351841	SW PUSH ESB62935 2THROW (L)
1-SW2	ES-351842	SW PUSH ESB62982 2-04-02S
1-SW4	ES-349464	SW SLIDE 0012031901-2 (U)
1-VR1	EV-337993	R S-FIX H RVF8P01 3P 203
1-VR2	EV-337992	R S-FIX H RVF8P01 3P 502
1-VR3	EV-345784	R S-FIX H RVF8P01 3P 304
1-L1	EO-345545	COIL VARI 2 TEFI-RF-1 (EXCEPTV)
1-L1V	EO-349348	COIL VARI 2 TEFI-RF-1A (V)
1-L2	EO-345546	COIL VARI 2 TEFI-RF-2
1-L3	EO-345547	COIL VARI 2 TEFI-OSC-U
1-L4	EO-336934	COIL FIX 1 LAL03KH 2R2M
1-L5	EO-337598	COIL VARI 2 25A-1353-01
1-L6	EO-337599	COIL VARI 2 25A-1354-03 (L)
1-L7	EO-338409	COIL LF FK0B160MH02 250UH (V)
1-T1	EO-337640	COIL IFT 119AC-15533X 10.7MHz
1-T2	EO-349001	COIL IFT 7MC-4718N 0.450MHz
1-T3	EO-351845	COIL DET 1 57-1279-04
1-T4	EO-351846	COIL OSC 2 7BRS-8897A 120.0UH
1-T5	EO-351847	COIL OSC 2 7BRS-8896A 570.0UH (L)
1-FL1	EH-315406	FILTER CE SFE10.7MLKA 10.7MHz (U,C,A,E,S,L-B)
1-FL1V	EH-345729	FILTER CE SFE10.7MZ1KA 10.7 MHz (V,L-E)
1-FL2	EH-315406	FILTER CE SFE10.7MLKA 10.7MHz
1-FL3	EH-349002	FILTER CE HCFM2-450BL 0.450 MHz
1-FL4	EH-349058	FILTER LC LP BL-30MP (V)
1-FL5,6	EH-349059	FILTER LC LP 10PD
1-VC1	EE-345556	VC AIR CR51J525
1-TC1	EC-337602	C S-FIX H CTZ51E127 4.5-20 (L)
1-TC2	EC-337602	C S-FIX H CTZ51E127 4.5-20
1-TC3	EC-337602	C S-FIX H CTZ51E127 4.5-20 (L)
1-TC4	EC-337602	C S-FIX H CTZ51E127 4.5-20
1-R39	ER-324480	⚠ R CB H S10 FS RDS 1/4W 470J (V)
1-R45	ER-324480	⚠ R CB H S10 FS RDS 1/4W 470J
1-R68	ER-324480	⚠ R CB H S10 FS RDS 1/4W 470J
1-R71	ER-324480	⚠ R CB H S10 FS RDS 1/4W 470J
1-R103, 104	ER-324480	⚠ R CB H S10 FS RDS 1/4W 470J
1-C17	EC-349347	C CE CGM A R75K 500DC
1-C58	EC-308142	C STY V F05 CQ09S 471J 50DC
1-C79	EC-330541	C STY V F05 CQ09S 411J 50DC
1-J1	EJ-337424	PIN J AJC-034-ABB P 2P
1-TM1	EJ-344423	TERMINAL W/SCREW YKD31-0133 P 2P
	LED (A) P.C BOARD	
1-D15,16	ED-349617	D LED SLP-475B-50 YLW
1-D17	ED-349584	D LED SLP-175B RED
	DIAL POINTER P.C BOARD	
1-D14	ED-351851	D LED SLP 458B UMBER
	POWER P.C BOARD	
1-SW3	ES-351844	SW PUSH SUL101A 2-02-02S
	LED (B) P.C BOARD	
1-D11	ED-349617	D LED SLP-475B-50 YLW (L)
1-D12,13	ED-349617	D LED SLP-475B-50 YLW

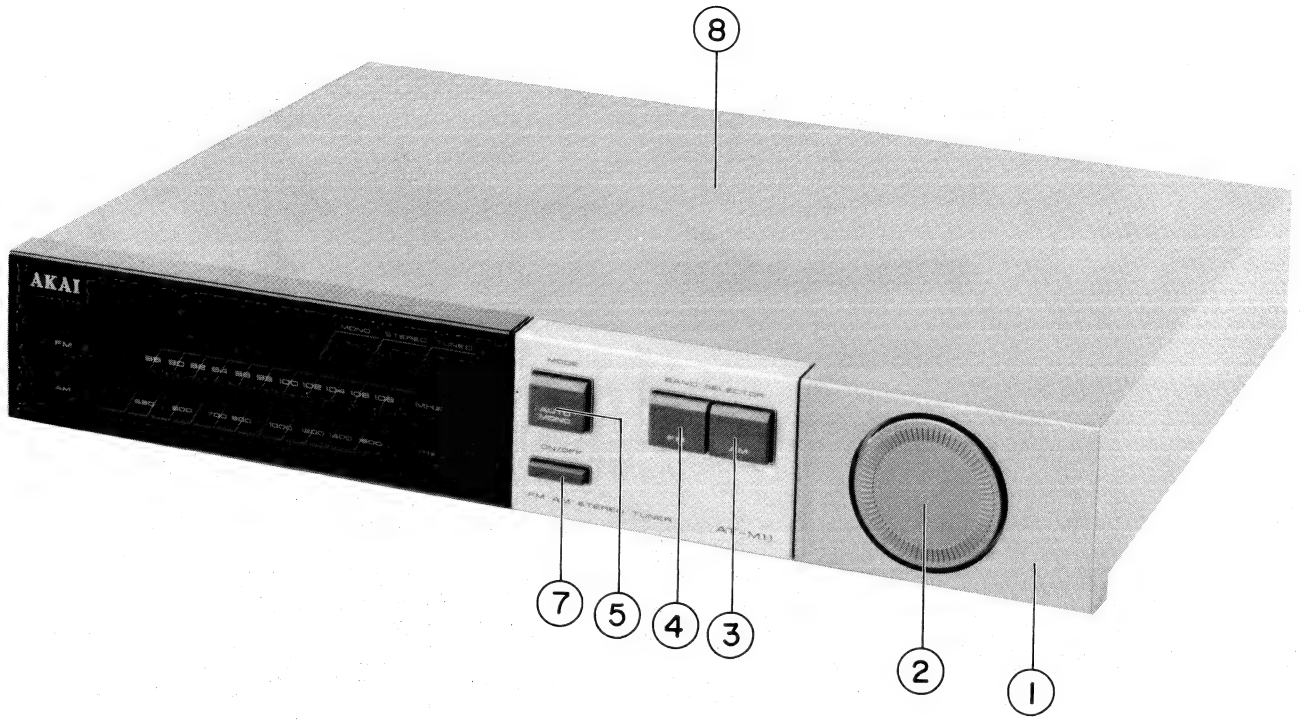
ASSEMBLY BLOCK



2. ASSEMBLY BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
2-1U	BT-351224	⚠ TRANS POWER AT-M11-70 (U) (T901)
2-1C	BT-351225	⚠ TRANS POWER AT-M11-20 (C,A) (T901)
2-1E	BT-351226	⚠ TRANS POWER AT-M11-40 (E,V,L-E) (T901)
2-1S	BT-351227	⚠ TRANS POWER AT-M11-50 (S,L-B) (T901)
2-2U	EW-349434	⚠ AC CORD 2 CORES KP-224, VFF AM-7 U/T (U)
2-2C	EW-305691	⚠ AC CORD 2 CORES KP-8, SPT-1 UC (C,A)
2-2E	EW-336923	⚠ AC CORD 2 CORES KP-419C, LTCE-2F EV (E,V,L-E)
2-2S	EW-336924	⚠ AC CORD 2 CORES KP-560, LTSA-2F S (S)
2-2B	EW-346249	⚠ AC CORD 2 CORES LCFL2 ×0.75 B (L-B)
2-3	EZ-631945	STRAIN RELIEF SR-4N-4
2-4U	SP-351430A	PANEL REAR AT-M11 (U)
2-4C	SP-351430B	PANEL REAR AT-M11 (A.C)
2-4E	SP-351430C	PANEL REAR AT-M11 (E.V)
2-4S	SP-351430D	PANEL REAR AT-M11 (S)
2-4LE	SP-351430E	PANEL REAR AT-M11L (E)
2-4LB	SP-351430F	PANEL REAR AT-M11L (B)
2-5	MS-351421	SHAFT TUNING ASSY
2-6	ZW-302896	N090×110×20STL CMT P075
2-7	MR-308836	PULLEY
2-8	MR-351422	PULLEY DIAL WHEEL
2-9	ZG-351423	SP PULL WHEEL
2-10	TA-307160	DIAL STRING TK-1064 D0.5
2-11	SA-202118	FOOT
2-12	ZS-308846	T2BR30×08STL BZN PROJECTION
2-13U	EF-306088	FUSE TSC 125V 0.31A (F1) (U,C,A)
2-13E	EF-695766	FUSE SEMKO T 250V 0.31A (F1) (E,V,S,L)
2-14x	ZW-305013	RV P0P32 (A)
2-15x	EE-337976	ANT LOOP LA-200A
2-16x	EJ-352118	SOCKET COAX PAL B2-714P-900

FINAL ASSEMBLY BLOCK



3. FINAL ASSEMBLY BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
3-1	BD-B351431A	PANEL FRONT (A) PART (EXCEPTL)
3-1L	BD-B351431B	PANEL FRONT (B) PART (L)
3-2	SK-345419C	KNOB TUNING (2)
3-3	SK-351427B	KNOB PUSH (A) AM (EXCEPTL)
3-4	SK-351427A	KNOB PUSH (A) FM (EXCEPTL)
3-3Lx	SK-351427D	KNOB PUSH (A) MW/LW (L)
3-4Lx	SK-351427C	KNOB PUSH (A) FM/AM (L)
3-5	SK-351427J	KNOB PUSH (A) AUTO/MONO
3-6x	ZG-351424	SP PUSH (A)
3-7	SK-351428	KNOB POWER
3-8	SP-350862A	COVER UPPER

INDEX

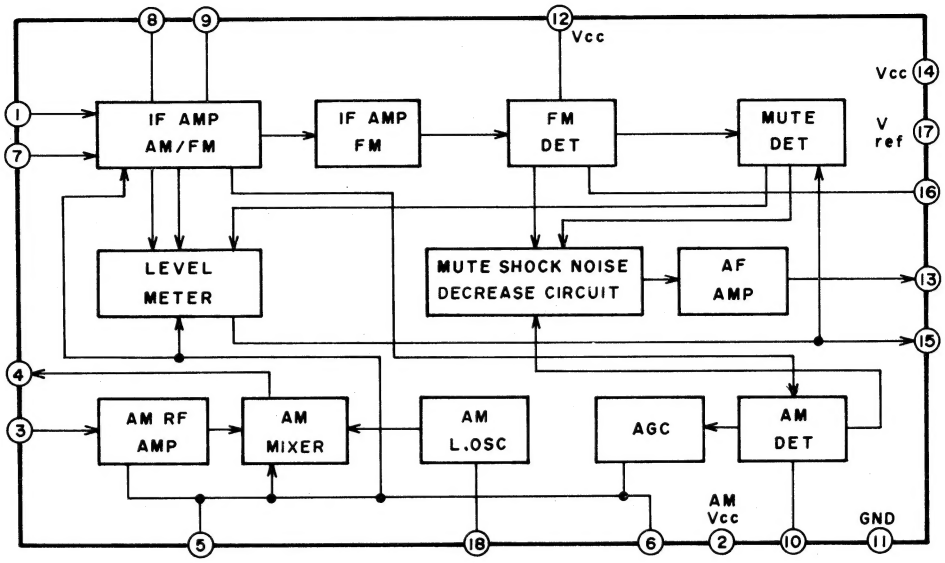
AKAI

MODEL AT-M11/L

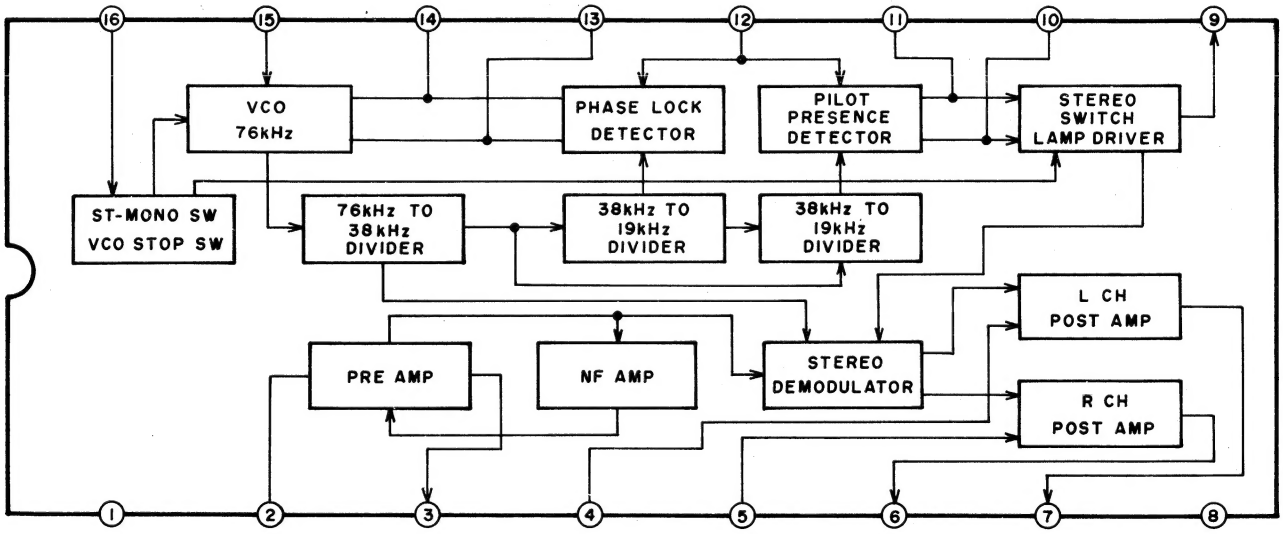
SECTION 3

SCHEMATIC DIAGRAM

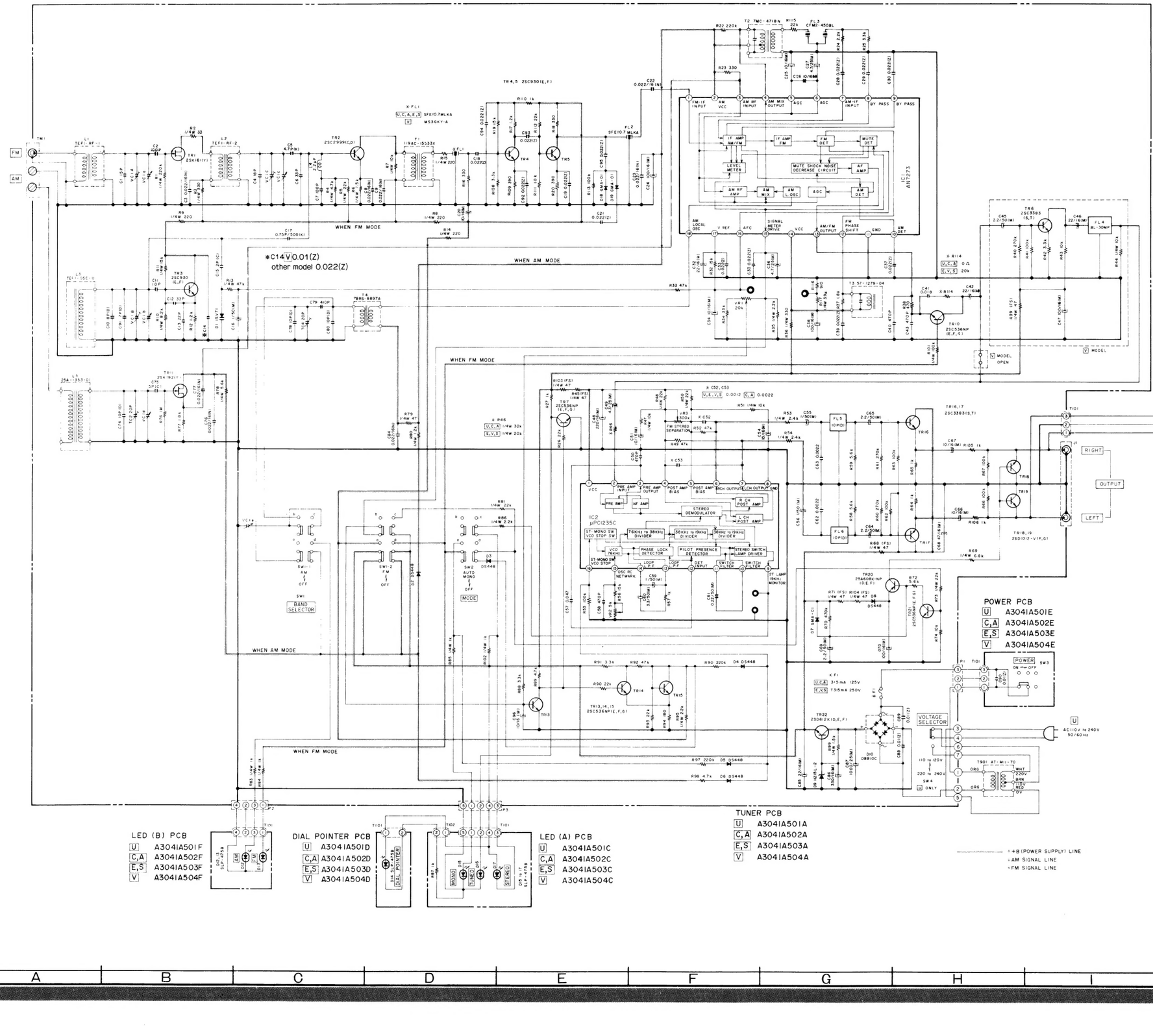
AN7273



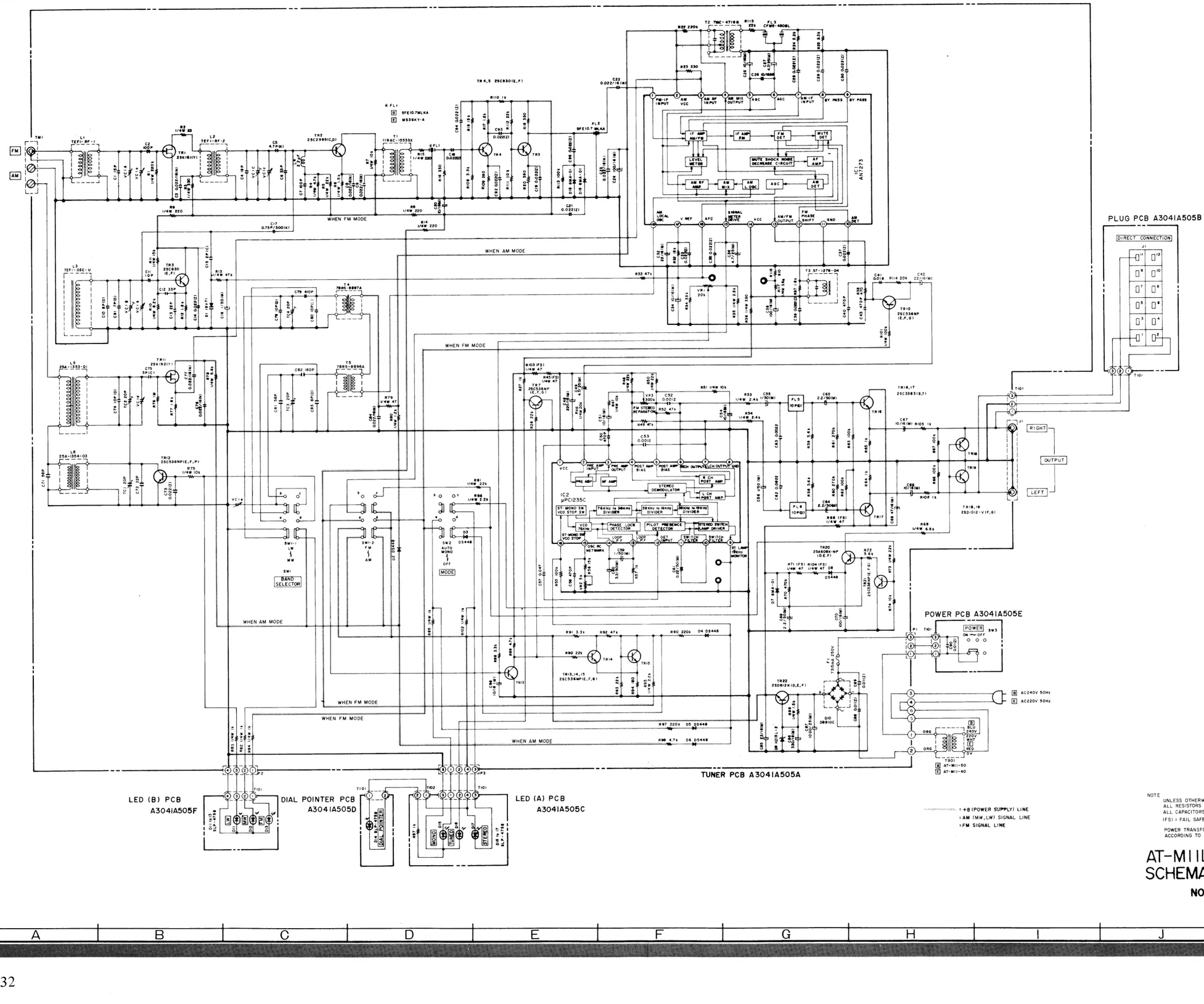
μPL1235C



AT-MII


WHEN FM MODE
WHEN AM MODE
*C14 V 0.01(Z)
other model 0.022(Z)
PLUG PCB
U A3041A501B
C,A A3041A502B
E,S A3041A503B
V A3041A504B
DIRECT CONNECTION
RIGHT
LEFT
OUTPUT
TUNER PCB
U A3041A501A
C,A A3041A502A
E,S A3041A503A
V A3041A504A
POWER PCB
U A3041A501E
C,A A3041A502E
E,S A3041A503E
V A3041A504E
LED (B) PCB
U A3041A501F
C,A A3041A502F
E,S A3041A503F
V A3041A504F
DIAL POINTER PCB
U A3041A501D
C,A A3041A502D
E,S A3041A503D
V A3041A504D
LED (A) PCB
U A3041A501C
C,A A3041A502C
E,S A3041A503C
V A3041A504C
+B (POWER SUPPLY) LINE
AM SIGNAL LINE
FM SIGNAL LINE
NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W(J)
ALL CAPACITORS IN μF 50 WV(J)
(FS) : FAIL SAFE RESISTORS
POWER TRANSFORMER IS DIFFERENT ACCORDING TO AREA
AT-MII
SCHEMATIC DIAGRAM
NO. 2-1 840220A

AT-M11L



E C B
2SA608K-NP
2SC536NP
2SC930
2SC3383

2SD612K

2SC2999
2SD1012-V

2SK161
2SK192

NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/6W (J)
ALL CAPACITORS IN μF 50 WV (J)
(FS) = FAIL SAFE RESISTORS

POWER TRANSFORMER IS DIFFERENT ACCORDING TO AREA

AT-M11L
SCHEMATIC DIAGRAM
NO. 2-2 840221 A 3C